

Name: _____

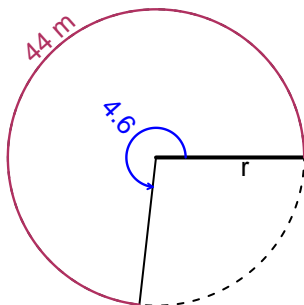
Date: _____

Trig Final (TEST v647)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

Question 1

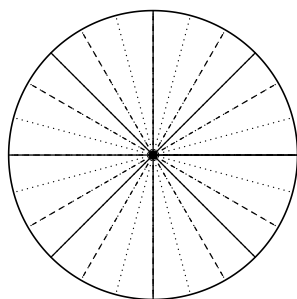
In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 4.6 radians. The arc length is 44 meters. How long is the radius in meters?



Question 2

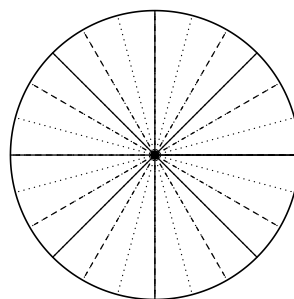
Consider angles $-\frac{15\pi}{4}$ and $\frac{7\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(-\frac{15\pi}{4}\right)$ and $\sin\left(\frac{7\pi}{3}\right)$ by using a unit circle (provided separately).

Mark $-\frac{15\pi}{4}$



Find $\cos(-15\pi/4)$

Mark $\frac{7\pi}{3}$



Find $\sin(7\pi/3)$

Question 3

If $\cos(\theta) = \frac{-12}{37}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -8.77$ meters, an amplitude of 7.59 meters, and a frequency of 2.22 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).